# Executive Summary and Key Findings

**The automotive industry is the largest manufacturing sector in the United States. It is truly a global industry with automakers from the United States, Europe, Japan and Korea producing cars and automotive parts for consumers around the world. With so much activity taking place, and growth in the sector expected to accelerate globally, this *Top Markets Report* provides U.S. auto parts suppliers the honest assessment of opportunities and challenges needed to successfully export to various markets throughout the world. Separate models were developed for original equipment (OE) parts and for aftermarket parts export markets through 2020. Rankings are provided for a total of 30 markets, with detailed country case studies written about eight different markets.**

The automotive parts industry has nearly doubled in the last five years. Today, there are large domestic automakers in countries around the world, including China, India and Russia -- not to mention, legacy manufacturers in the United States, Europe, and Japan. Each manufacturer produces their own parts, such as engines, transmissions, frames, and body parts. But, increasingly, many large manufacturers are turning to first tier suppliers for the design and production of most components, and even large subassemblies. In fact, large first-tier suppliers are now as global as the vehicle manufactures.

The first-tier suppliers get subcomponents from second and third-tier suppliers and this chain continues down to raw material suppliers. The goal of automakers is to produce in the market/region where the vehicle will be sold, and to shorten supply chains to the extent that it is economically feasible. Mass-produced vehicles are generally only exported to countries where the economies of scale do not support local assembly. The major exception is limited-production luxury, sports, or other special use vehicles.

Similarly, the goal is to produce OE parts as close to the assembly plants as possible. Modern auto plants are built for just-in-time delivery of components, making long overseas supply chains costlier and riskier. Exceptions tend to be high tech, high cost, and light-weight components, such as computer modules.

Another example is exports of light weight alloy wheels are more likely than exports of heavy and inexpensive basic steel wheels. The situation is similar for aftermarket parts, but not always to the same degree. An aftermarket replacement part such as a shock absorber or brake assembly could be the exact same part, built by the same OE supplier. But this would be less true for expensive and/or high tech specialty components used at the discretion of the purchaser to enhance the appearance or performance of a vehicle.

As a result of these factors, you do see the massive intra-regional trade between the United States, Canada, and Mexico in both OE and aftermarket parts, while imports are smaller in countries such as Japan and Korea. On the other hand, you find relatively large sales of aftermarket, including specialty aftermarket parts in smaller countries such as the UAE and Saudi Arabia, which do not support local production.

While the global automotive industry is fiercely competitive, there are other factors that limit or even distort trade. For decades various governments around the world have used trade distorting policies to support the creation/expansion of domestic automotive industries that were not otherwise economically feasible. This has been accomplished through combinations of subsidies, tariffs, and non-tariff barriers.

A prime example is India, which has a large and rapidly growing automotive industry made up of indigenous manufacturers and foreign companies forced to produce there by prohibitive tariffs. Brazil has a large industry made up of foreign manufacturers facing high localization requirements. The Malaysian national automobile industry makes noncompetitive vehicles, but is highly subsidized and protected by barriers.

Another particularly important and rapidly growing impediment for U.S. exporters is the development or acceptance of safety and environmental standards/regulations that differ from the United States. This is a major problem whether these

differences were created as a purposeful barrier to trade, or not.

The bottom line is that exporting auto parts from the United States to various markets can be challenging, even for the most competitive suppliers. This *Top Markets Report* examines issues related to U.S. automotive parts exports and includes eight country-specific case studies for Germany, Thailand, Colombia, Brazil, Mexico, Korea, China, and Saudi Arabia.

**Understanding the Industry**

The automotive parts manufacturing industry is comprised primarily of two segments: original equipment (OE) suppliers and aftermarket suppliers. OE suppliers design and manufacture parts required for the assembly of passenger cars and trucks. OE production accounts for an estimated two-thirds to three-fourths of the total automotive parts production. Thus, automotive parts consumption is heavily linked to the demand for new vehicles. If vehicle production goes up/down in a given market, then demand for OE parts will correspondingly go up/down, as well. Conversely, if a market has little, or no, domestic vehicle production, demand for OE parts will be limited or nonexistent.

Aftermarket parts are automotive parts built or remanufactured to replace OE parts as they become worn or damaged. Automotive aftermarket buyers include: retailers, repair/service facilities, do-it-yourself consumers, and wholesaler/distributors. This segment provides parts and equipment for maintenance, repair and enhancement of vehicles. Related to this is specialty equipment, which are the parts and tools for consumer preference vehicle modifications. Specialty equipment refers to parts made for comfort, convenience, performance, safety, or customization, and are designed for add-on after the original assembly of the motor vehicle.

Automotive parts include, but are not limited to:

- Bodies and parts
- windshields
- chassis and drivetrain parts
- electrical and electric components (fans, compressors, storage batteries, signaling equipment, etc.)
- engines and parts
- miscellaneous parts (brake fluid, anti-freeze, lifting machinery, etc.)
- automotive tires and parts

See Attachment 1 for the ten digit Schedule B codes of the automotive parts covered in this report.

**Why a focus on automotive parts?**

Vehicle manufacturers are large companies that historically like to build where they sell. Companies, including Volkswagen, Ford, GM, Honda, Hyundai, etc., typically have established manufacturing facilities throughout the world. Given these manufacturers' large, international operations with marketing and manufacturing operations, they have already tapped into most of the markets, both large and small. These companies also already have established business connections with their Tier 1 suppliers, and rely heavily on just-in-time delivery from these suppliers in order to maintain optimal productivity through the manufacturing process. In addition, vehicle manufacturers have very sophisticated plans in place when making sourcing and investment decisions.

Automakers deliver vehicles either through established assembly plants in the markets or through complex export operations delivering to smaller markets. For example, BMW manufactures products at 30 sites in 14 countries on four continents. Likewise, BMW uses its Spartanburg, South Carolina plant as a base for exports since the mid-1990s and is the sole location for exclusive production of its X-3, X-5, and X-6 models. In 2013, almost 300,000 vehicles were manufactured at this facility with 70 percent of the plant's production volume exported to 140 markets around the world. Similarly, the 2015 Mustang, assembled in Flat Rock, Michigan, will be available in more than 100 markets.

Some suppliers are similar to the vehicle producers in that they are large, complex operations with investments throughout the world. For example, Magna has over 130,000 employees with 312 manufacturing operations and 83 product development, engineering and sales centers in 29 countries. Denso has approximately 140,000 employees and operates in 35 countries, with global sales totaling $39.8 billion for the fiscal year that ended March 31, 2014. In contrast, many Tier 2 (and lower tiers) manufacturers of automotive parts are small and medium-size enterprises (SMEs).

Most U.S. SME auto suppliers do not export. Those that do export do so primarily to Canada and/or Mexico. This demonstrates untapped potential to introduce U.S. suppliers to foreign markets, particularly for the aftermarket. These SMEs do not have the marketing departments, international operations, and vast resources to readily expand their operations to new markets throughout the world in the same capacity as the vehicle manufacturers and many of the Tier 1 suppliers.

This *Top Markets Report* aims to identify the best markets going forward for these companies to focus their efforts in identifying export opportunities. By focusing on automotive parts, this study provides helpful market information to assist these companies in identifying promising markets to expand their business, grow exports, and remain competitive on a global scale.

**Export Markets**

In 2009, the United States exported approximately $43 billion worth of automotive parts. The top five markets in order were: Canada, Mexico, Germany, China, and Japan. By 2014, the value of automotive parts exports from the United States had risen to almost $81 billion. The top five markets by 2014 had changed to: Canada, Mexico, China, Germany, and Australia. See Attachment 2 for a full list of the top 30 export markets for U.S. automotive parts between 2009 and 2014. Trade data related to auto parts does not distinguish between OE and aftermarket parts, which is a limitation for this analysis.

Of the nearly $81 billion of U.S. automotive exports in 2014, Canada accounted for about $30 billion of these exports, with Mexico accounting for almost another $29 billion. Combined, these two NAFTA partners accounted for almost 75 percent of all U.S. automotive parts exports. Exports to both of these markets grew substantially over the same time period, with exports to Mexico more than doubling from $12.1 billion in 2009 to over $29.1 billion by 2014. As a result of NAFTA, the U.S. auto parts industry is highly integrated in the North American supply chain, contributing to the flow of goods among the three markets. The third leading market for U.S. exports in 2014, China, has steadily been growing as a market for U.S. exports over the last five years. U.S. automotive exports to Australia more than doubled over five years from $687 million in 2009 to almost $1.5 billion in 2014.

For the European market, Germany is the top destination for U.S. automotive parts exports, followed by the United Kingdom, the Netherlands, Italy, Belgium, and France. Brazil is the top destination for U.S. parts exports in South America with exports nearly doubling from $554 million in 2009 to $1.1 billion in 2014. The next largest markets in this region for U.S. parts are Chile, Venezuela, Colombia, Argentina, and Peru.

**Challenges facing U.S. automotive parts exporters**

One of the greatest challenges facing U.S. auto parts exporters is the global regulatory environment. Lack of harmonization/coherence and transparency of regulations and standards, deeply affect the competitiveness of U.S. vehicle and automotive parts manufacturers worldwide. Conforming to two different standards is costly and time-consuming. Until recently, most developing countries have had only limited regulatory requirements and thus they accepted virtually any vehicles built to minimal safety and emissions levels. This has made it possible for American companies to export U.S.-compliant vehicles and products for sale to these markets.

Unfortunately, many countries are now choosing to either accept or base their regulatory standards on those developed by the European Union. Because of this, they are no longer allowing the sale of U.S.-compliant products in their markets. It is an irony that many of the countries that are adopting EU standards have systems more similar to the U.S. system (e.g., Chile, Colombia, Russia, etc.).

They have been doing this largely because the EU has been aggressive in marketing its regulatory system and appear to be including requirements for adopting its standards in its trade agreements. However, now there is a possible threat to the EU system as well. In addition to the barriers cropping up from the mandatory use of EU standards, there are recent hints that emerging markets like China or India are developing their own standards. Having a third, fourth, or potentially more set of standards will make it even harder to export to other markets, and certainly raise the cost of doing business. This is one of the many reasons why it is in the interest of the European and

U.S. policy makers to push for standards coherence in the ongoing Transatlantic Trade and Investment Partnership (TTIP) negotiations.

Another barrier to trade for auto parts manufacturers (especially small to medium-sized companies) is the push by foreign governments for localization. In an effort to increase investment in their local economy, some countries encourage localization and offer incentives to build a manufacturing facility and/or partner with a local firm. China, for example, pressures companies to produce in country and partner with local vehicle manufacturers and suppliers in order to build up its indigenous industry.

Many markets with a fairly large domestic industry impose high tariffs and excise taxes in order to drive up the costs of imports. In Thailand, ad valorem tariffs can be as high as 80 percent for imports that compete with domestically produced automobiles and parts. Excise taxes on automobiles are usually based on various vehicle characteristics such as engine size, weight and wheelbase, which make the tax calculation complex.

Exporting automotive parts to the European Union can amount to tariffs of 2-5 percent of total costs and, for already assembled parts, tariffs may even account for 15-20 percent of overall costs. Where there are low margins, tariff costs can result in missed business opportunities overseas.

In addition, some government policies attempt to close the market for outside competitors by forcing consumers to work within an established network of local companies. These policies regulate and restrict foreign companies from competing by creating restrictions on investment and distribution, and by regulating purchasing decisions by consumers. U.S. automotive manufacturers have complained about Japan's closed market for decades, and in 1995, the U.S. Government signed a major automotive trade agreement with the Japanese Government. However, the Japanese market is still a major challenge for U.S. vehicle and parts manufacturers to enter. One of the chief obstacles in concluding the Trans-Pacific Partnership (TPP) is the deadlock between the United States and Japan over remaining automotive issues. In Korea, the signing of the U.S.-Korea Free Trade Agreement has created a more balanced playing field for U.S. exporters.

A final factor that can make exporting difficult is the ever-increasing competiveness of the automotive industry worldwide. There are more and more parts suppliers entering the market offering lower price points, quality products, and/or advanced technologies. In addition, some of these suppliers receive or have received subsidies provided by their local governments.

U.S. manufacturers with aftermarket products that are easy to produce and fairly low tech will face the greatest challenges. The U.S. Department of Commerce can provide counseling to determine the export potential for U.S. auto parts suppliers' products. In addition, U.S. suppliers will benefit from Commerce's market intelligence and business matchmaking services. If problems arise, commercial advocacy and diplomacy assistance can also be offered.

Furthermore, the conclusion of a number of our trade agreements will hopefully create better opportunities for U.S. parts suppliers, and lower the cost of doing business. These trade agreements aim to increase harmonization, lower tariffs, reduce barriers, and address issues such as counterfeiting and intellectual property protection.

**Methodology**

The methodology for our two models was to identify variables that measured the overall demand for these particular parts, the degree to which this demand would be met by imports, and the likelihood that imports would originate from the United States. Many different data points were tested, in various combinations, until a logical set of variables emerged. Weights were then assigned based on our assessment of relative importance.

In some cases, we were not able to include a factor of interest due to lack of data or we had to use a proxy variable to try and capture the factor. For example, the average vehicle age for a market is a likely indicator for the need of aftermarket parts. The older the vehicles tend to be in a given market, the greater the likelihood that repairs will be needed and therefore more replacement parts. However, we were unable to identify a single reliable source for the vehicle age in each of the markets analyzed in our study. Therefore,

**Figure 1: Near-Term Autoparts Export Market Rankings (2015-2020)**

| Original Equipment | | |
|---|---|---|
| Country | Rank | Score |
| Canada | 1 | 0.741 |
| Mexico | 2 | 0.619 |
| China | 3 | 0.485 |
| Germany | 4 | 0.413 |
| Belgium | 5 | 0.403 |
| Japan | 6 | 0.402 |
| Netherlands | 7 | 0.395 |
| Chile | 8 | 0.380 |
| United Kingdom | 9 | 0.378 |
| Sweden | 10 | 0.375 |
| France | 11 | 0.359 |
| Korea | 12 | 0.356 |
| Colombia | 13 | 0.343 |
| Spain | 14 | 0.341 |
| Poland | 15 | 0.339 |
| Italy | 16 | 0.337 |
| Venezuela | 17 | 0.325 |
| Turkey | 18 | 0.319 |
| South Africa | 19 | 0.307 |
| Russia | 20 | 0.301 |
| Thailand | 21 | 0.295 |
| India | 22 | 0.291 |
| Brazil | 23 | 0.289 |
| Argentina | 24 | 0.265 |
| Hong Kong | 25 | 0.232 |
| Singapore | 26 | 0.227 |
| Australia | 27 | 0.174 |
| Peru | 28 | 0.169 |
| UAE | 29 | 0.168 |
| Saudi Arabia | 30 | 0.140 |

| Aftermarket | | |
|---|---|---|
| Country | Rank | Score |
| Canada | 1 | 0.748 |
| Mexico | 2 | 0.571 |
| China | 3 | 0.297 |
| Singapore[1] | 4 | 0.247 |
| Chile | 5 | 0.234 |
| Peru | 6 | 0.230 |
| Belgium | 7 | 0.229 |
| Australia | 8 | 0.214 |
| Netherlands | 9 | 0.211 |
| Germany | 10 | 0.211 |
| UAE | 11 | 0.207 |
| United Kingdom | 12 | 0.197 |
| Saudi Arabia | 13 | 0.193 |
| Sweden | 14 | 0.190 |
| Japan | 15 | 0.187 |
| Colombia | 16 | 0.184 |
| France | 17 | 0.170 |
| Korea | 18 | 0.168 |
| Venezuela | 19 | 0.163 |
| Italy | 20 | 0.147 |
| Poland | 21 | 0.138 |
| Spain | 22 | 0.137 |
| Thailand | 23 | 0.137 |
| South Africa | 24 | 0.136 |
| Turkey | 25 | 0.135 |
| India | 26 | 0.121 |
| Brazil | 27 | 0.115 |
| Russia | 28 | 0.113 |
| Nigeria | 29 | 0.087 |
| Argentina | 30 | 0.085 |

we developed a proxy variable by creating a measure using sales as a share of vehicles in operation.

For OE, we identified seven factors, and for aftermarket we identified six factors. The seven variables used for the OE model are: Vehicle sales in a market; Value of U.S. parts exports to a market; U.S. import share in the market; Projected vehicle production in a market in 2019 by volume; Distance of the market from the United States; past vehicle production in the market; and the market's openness to trade.

The six variables used in the aftermarket model were: Projected vehicle sales in the market by 2019; U.S. parts exports to the market by value; U.S. import share in the market; vehicle age proxy ; distance of the market from the United States; and the openness of the market to trade [further details in Attachment 3].

**Results**

As can be seen in the table above, there are some similarities in the results for both the OE and aftermarket analyses, yet distinctions emerge in both the rankings and the relative values for many countries. For both the OE and aftermarket rankings, the top three are Canada, Mexico, and China.

However, the three markets maintain these high scores for varying reasons in each analysis. In regards to OE, China had the highest average vehicle production between 2011-2013 (19.9 million vehicles) that easily eclipsed even the second largest vehicle producer in this analysis during the same time period

(Japan 9.3 million vehicles produced on average). China is also projected to produce over 32 million vehicles by 2019. In addition, it is the third largest market for U.S. automotive parts. Combined, given the weight assigned to these factors in this analysis, China is a strong prospect market for U.S.-made OE auto parts in the future with a total score competitive with Mexico in the coming years. For the aftermarket, again due largely to the sheer size of the market in China and the recent growth of U.S. auto exports there, China is a market with large potential.

Canada and Mexico, however, are the top two prospective markets for a different set of reasons. Although they do not produce nearly as many vehicles as China (although Mexico's production is expected to grow rapidly from an average of 2.9 million between 2009-2011 to over 4.5 million by 2019), they have historically been the largest market for the export of U.S. automotive parts, accounting for over 75 percent of U.S. exports in 2013. In addition, given the integration of the auto industry among Canada, Mexico, and the United States, and the close proximity in terms of distance and sharing a border, these markets will continue to be strong prospect markets for U.S. auto parts exporters going forward.

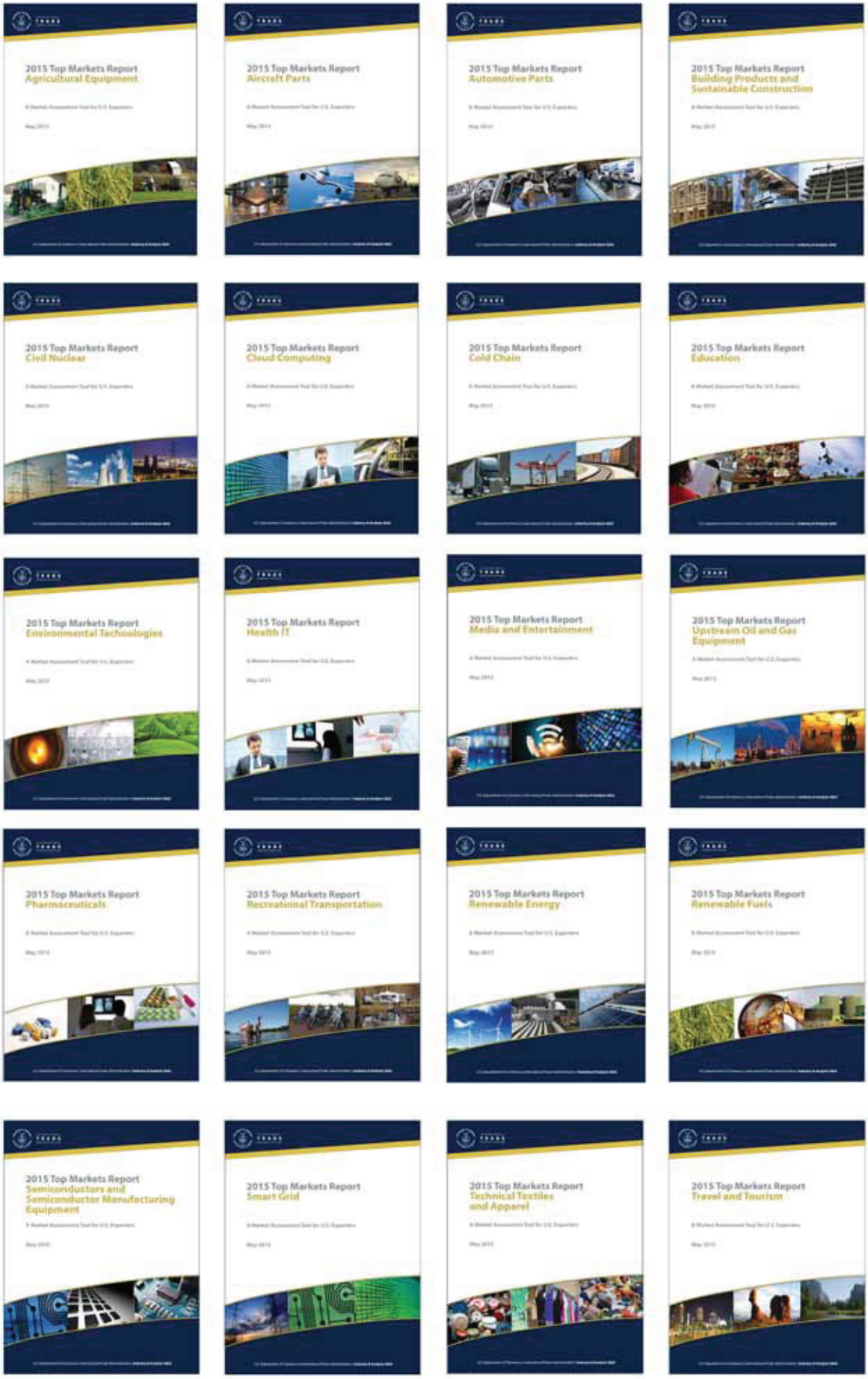
Looking further at the results from the OE model, Germany, Belgium and Japan round out the top six potential markets behind Canada, Mexico, and China. Japan's average production between 2011 and 2013 was 9.3 million vehicles. Over the last three years, Japan has been the sixth largest market for U.S. parts exports, with an average of $1.4 billion in exports during that time. While it is a niche market in terms of size compared to our NAFTA partners, Japan should continue being a top market for U.S. exporters to pursue given its volume of production. A successful conclusion of TPP negotiations will improve Japan's openness to trade, and improve U.S. auto part exporters' prospects. Germany shares a number of these same characteristics: its average vehicle production between 2011 and 2013 was almost 6 million units, it was the fourth largest export destination for U.S. parts with an average of almost $1.7 billion in exports between 2011 and 2013, and it also scores highly on the openness to trade scale.

Other markets had dramatically different rankings in the two different models. This is not surprising given the different factors considered in the models, especially for a country with a modest sized market for vehicles, but without domestic vehicle production. For example, UAE was near the bottom in the OE model rankings, which is to be expected due to its lack of vehicle production. UAE does rank much higher in the aftermarket coming in at number eleven.

Similarly, Australia ranks highly at number eight for aftermarket, but is near the bottom for OE equipment. This can be explained by the fact that Australia has a large market for vehicles and is projected to continue having sales of vehicles exceeding one million units in 2019, but vehicle production will cease within the next few years and therefore eliminate the demand for OE equipment.

There are a myriad of other factors that account for the potential of a market. Poor roads in Mexico put strain on a vehicle fleet that is relatively old, thus requiring more maintenance and aftermarket repairs. In addition, the similarity of vehicle fleets in the United States and Mexico provide an obvious market for U.S. parts exporters. Similarly, the combination of older vehicles and lower wages in Colombia creates high demand for aftermarket repair parts as vehicle repair is more economical than vehicle replacement.

China has an interest in green technologies and is a rapidly expanding green automotive industry, which is a strength of U.S. companies and may allow an opportunity for U.S. auto parts exporters to capitalize. Likewise, there is high demand for specialty performance and appearance products for vehicle modification in Saudi Arabia given its high levels of disposable income. In addition, larger vehicles are popular in this market, which is a segment dominated by U.S. vehicle manufacturers.

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